

JOURNAL  
OF  
SOUTH AFRICAN BOTANY  
VOL. VII.

---

WILLIAM JOHN BURCHELL, BOTANIST.

By HELEN M. MCKAY.

Part IV : BOTANICAL INTERESTS FROM 1830-1863.

After an absence of five years, Burchell arrived once more at Fulham on 25th March, 1830. Owing to the death of his father and of R. A. Salisbury,(7) much of his time was now occupied with legal affairs: but, nevertheless, he corresponded with Swainson,(32) the Duncan brothers at Oxford,(47) and Lindley.(48) To Dr. William Hooker, who was still Professor of Botany at Glasgow University, he sent the account of his journey in Brazil. This was published in due course, but his boxes containing his collections remained unpacked for many years.

A few months after his return, he visited Oxford. This is confirmed by an entry in Dillwyn's(49) diary.\*

"Sunday, June 20, 1830.

I dined with the Duncans at New College when I met Burchell the African Traveller, Genl. Peachey [Beechy ?] etc., and again met the same party at Dr. Buckland's in the Evening."

An evening spent with genial Dr. Buckland(50) could not possibly be a dull one, though matters other than botanical doubtless formed the topics for discussion.

In a letter† written to Lindley(48) on 10th December, 1830, he says :

"With respect to my own future botanical labors, I have such abundant materials that I can well spare a few out of twelve thousand species. As it appears to me at present very uncertain when I may

\* *The Diaries of Lewis Weston Dillwyn*. Aberystwyth: The National Library of Wales.

† The Library, Royal Botanic Gardens, Kew. Letters MSS.

have time, or even room to arrange my herbaria, I still think you ought not to neglect any offer from the Cape to collect for you : for, although you may receive them later than mine, there might perhaps be amongst them some species which may have escaped my search or of which I have no duplicates : especially as many species are very local, or very rare, or only visible for a short time in the year."

Memoir No. 17 of the Botanical Survey of South Africa, published in 1937, deals with *The Vegetation of the Divisions of Albany and Bathurst*. Dr. R. A. Dyer, the writer of the Memoir, remarks (page 15) :—

"Systematic treatment of many of Burchell's novelties was forestalled by the early publications of descriptions of specimens collected by Ecklon and Zeyher and Drège about 15 to 20 years after Burchell's time."

Dr. Dyer has called attention to a fact which has not been fully appreciated by some botanists who have written about Burchell. In that letter which was sent to Lindley prior to Drège's second journey in South Africa (1832-34), Burchell shows that he foresaw difficulties such as Dr. Dyer indicates. It seemed futile, nevertheless, for him to act differently while he entertained a high standard regarding his filial duties.

Unfortunately, Lindley's reply to the letter of 10th December, has not yet been found, but it called forth another letter from Fulham, dated 20th December, 1830 :—

"A plan which I have long had in view is to form, by means of the exchange of my own duplicates, a general herbarium consisting only of authentic specimens from authors, of named and published (or publishing) plants. Although I have had various proposals of exchange made to me, I have hitherto been prevented do[ing] any thing in this way, by the fear of creating confusion in nomenclature with respect to my undescribed species : having been desirous of delivering them with a well-settled name corresponding to my "geographical catalogue," a work I intend for publication both with a view to geographical [botany], and to its serving as a *clavis* to the printed labels now affixed to each specimen.

I had adopted a mode of arrangement with De Candolle which at first I thought would answer very well the purpose of giving to the public my botanical discoveries earlier than I could find time for doing it myself : but this mode not having (I am sorry to say) been adhered to, I have no recourse but to defer the publication till I shall have examined and named them myself : a labor which, in the midst of too many other pursuits, must necessarily proceed but slowly.

I should be very glad to possess from your own herbarium, duplicates of your published species, but, as it is to be my rule not to receive any till I can immediately give others in exchange, I can profit by your offer only prospectively. I continue always to bear in memory offers of this kind, and shall, as soon as it shall be practicable, commence with great pleasure the distribution of my duplicates.

A preparatory step is, as I have before mentioned, the arrangement of my herbarium, and I should be glad if, at your leisure, you could inform me whether there has been published any *complete* synopsis of all the modern Natural Orders with the names of the genera included in each, during my absence in Brazil."

This letter may be considered as a confession of faith. It explains Burchell's conduct and proves to be false the accusations of hoarding, because of bitterness and jealousy, that were applied to him by some who seemingly misunderstood his actions.

Burchell was anxious, despite difficulties in his immediate environment, to proceed with the classification of what he was justified in considering valuable material. While he was still in Brazil, he had realised trouble ahead of him, for he wrote to Salisbury<sup>(7)</sup> from Rio, in 1826 :—

"I daily feel the want of some complete system of Natural affinities. For unless the more laborious lucubrations of the sedentary Naturalists keep pace with the discoveries of the many travellers of foreign regions, we shall be soon overwhelmed with confusion of riches merely because the architects of systems have not provided proper places to receive them."

He had depended on De Candolle who found, by 1821, that he had begun to work out his new system of classification on too big a scale and then decided to continue his *Systema Naturale* in the form of a *Prodromus* to be issued in seventeen volumes. Burchell was naturally upset over the new arrangement. De Candolle's change in the form of presentation is commented on by Ernst Meyer, Professor of Botany at the University of Königsberg, when, in 1835, he says :—

"I undertook to write commentaries on Drège's plants, not a *flora* of Southern Africa, since I think this can only be done when the illustrious De Candolle shall have published Burchell's plants, Ecklon and Zeyher theirs and I have completed those of Drège."

Burchell, in all good faith, waited for De Candolle: others stepped in before him with their publications and, because he made no public statement about what had happened, misunderstandings arose. But the passing years were not without their interesting happenings.

During the early months of 1831, he was not enjoying good health ; he had a touch of fever and was suffering from lumbago and rheumatism. He was cheered, however, by visits from Henslow ;<sup>(51)</sup> from Dr. Roget, physician and writer of the famous *Thesaurus of English words and phrases* ; from General Hardwicke who had collected for the East India Company at Calcutta, and from his great friend Swainson. Later in the year, he visited the west of England and, needless to say, collected wherever he went.

On 18th June, 1832, the British Association for the Advancement of Science (founded in 1831), met at Oxford under the Presidency of Rev. Dr. Buckland.<sup>(50)</sup> Burchell attended the meetings and was elected to the Committee of Section IV which dealt with Zoology, Botany, Physiology and Anatomy, and which was presided over by Rev. P. B. Duncan.<sup>(47)</sup>

No ladies were allowed to be present at the gathering of *savants*, so his beloved sister Mary could not be with him ; but he wrote to her very cheerfully and said :—

“ I shall probably stop here the week ; but if anything more important requires me at home sooner, you must write.”

With the exception of Geology, all scientific subjects (and especially Botany) were neglected in Oxford at the beginning of the nineteenth century, so it is not astonishing to read of “ The Times ” declaring meetings of the British Association as useless, and of Keble (the theologian and poet) thinking them beneath the dignity of the University. But the meeting at Oxford was a success, and Botany began to take on new life there.

Burchell served on the Committee of Section IV for two years, became a Life Member of the Association in 1835, and attended several of the annual meetings, the last at which he was present being the famous Oxford gathering of 1860.

#### A VISIT TO THE CONTINENT.

In September, 1832, he despatched 87 out of his 102 species of South African ferns to Greville<sup>(55)</sup> at Edinburgh, packed up all his African Compositae and set off, with a younger sister, to visit De Candolle at Geneva. They stayed at Paris for ten days, and naturally, Burchell called at the Jardin des Plantes to see Adrien de Jussieu who had succeeded his father as Professor of Botany there. His sister was eager to do the Grand Tour, so that left less time for botany than he wished to have ; but he considered the trip useful, for he made personal contact with several important botanists.

At Basle he stayed a few days, and was entertained by Dr. Meisner<sup>(52)</sup>, with whom he corresponded in later years concerning his *Thymeleae*. He spent a week with De Candolle at Geneva. He had planned to sail down the Rhine, but found that, for political reasons and the prevalence of cholera in the country, it was judicious to avoid passing through Holland.

#### IN ENGLAND.

The year 1833 appears to have been an uneventful one so far as botanical work is concerned, except for visits to Oxford in connection with British Association Committee meetings, and correspondence with Lindley<sup>(48)</sup> about *Orchideae* and Bentham about *Labiatae*.

In May, 1834, the University of Oxford conferred on William John Burchell the highest degree which is in its power to bestow, the degree of Doctor of Civil Law, *Honoris Causa*. This was a remarkable honour in those days for a man who was not a graduate of Oxford, and who, in his published work, had advocated a new outlook on the study of the science of botany.

A week before Burchell received his degree, his friend Daubeny,<sup>(53)</sup> who had till then occupied the Chair of Chemistry, delivered his inaugural address as Professor of Botany and, on the day Convocation was held, gave the first of his course of lectures on Vegetable Physiology, a subject which Burchell had mentioned in his *Travels*.<sup>\*</sup> These happenings go to prove that in Oxford, Botany was now taking on a new lease of life: research work had begun and the subject was receiving attention from a viewpoint other than that of the herbalist, and that the gathering of plants was now regarded more than just a harmless and elegant occupation for the female sex.

Burchell seems to have visited Oxford at least once, if not twice a year, and from his letters it can be gathered that whenever he went there, he was happy and was always received as an honoured guest.

Regarding the ferns which had been sent to him, Greville<sup>(35)</sup> wrote in November, 1834 :†—

“ I have at last the pleasure of sending you the result of my examination of your ferns. I have gone through them with considerable care. You will observe there are a good many new species particularly in the genus *Cheilanthes* which seems to hold its headquarters in South Africa. I am thinking of drawing up a Paper upon the collection for the *Cambridge Transactions*, as I believe a few plates would be allowed me and I could get a portion of the

<sup>\*</sup> *Travels*, I., page 255.

† This letter is an inset in the *Memoranda Botanica* MS. II.

fronds of several species into each 4to plate. It is of great importance to get new species illustrated."

This shows that his South African material was receiving attention ; meanwhile, his Brazilian collection remained untouched.

#### ON THE CONTINENT.

Towards the end of 1837, Burchell set out, without any encumbrances, on a trip through Europe. In letters\* written to his sister Mary, he gives a very interesting account of his tour. He comments on the country in general, tells of the people he met, and says that when he was obliged to speak German to make himself understood, he "produced a mixture of Dutch and French with Portuguese to give it a flavour."

He proceeded by way of Hamburg to Hanover, where he joined Olaf Hesse, a son of his old Cape Town friend, and they set out in a one-horse open carriage on a trip to the Hartz Mountains. They climbed the pine-clad Brocken, a mountain which Burchell considered was less interesting than the Welsh Cader Idris.

At Leipzig, he had the pleasure of once more meeting Tilesius,<sup>(28)</sup> now a very old man. They talked of the days spent on St. Helena, and Burchell was well supplied by him with letters of introduction to important individuals.

He was in Prague in November, 1838, and remarks :—

"The climate is so much more severe here in winter than it is in England, that they are obliged to keep the Common holly, Furze, Rhododendron, etc., in greenhouses. I have been once to the Opera—in the better seats for 1/4—to the commemoration of Mozart's *Don Juan*, which he for the first time brought out at this theatre, just 50 years ago—so you may be sure it was performed in the greatest perfection possible."

In December, he was in Vienna, the easy-going, laughter-loving Vienna of tradition, and was received by the local potentate, Archduke John.

This Archduke had travelled extensively, and always took with him a qualified draughtsman. Burchell records that he spent much time talking about his travels in England and Turkey and "subjects connected with them." More letters of introduction were offered to him, and he was asked to visit Vienna again during the following summer.

While in this city, Burchell met Endlicher, Professor of Botany, with whom he later corresponded regarding Compositae.

\* In the Library of Hope Dept. of Zoology (Entomology) Univ. Mus. Oxford.

By way of Venice, Padua, Bologna and Rome, he reached Naples about the beginning of May, 1838. He sailed from there to Marseilles, touching at Civita Vecchia, Leghorn and Genoa. He was away from Fulham for ten months. In a letter written to Swainson<sup>(38)</sup> in August, 1838, he says that on his return he was once more plunged into family cares and worries, one of them being that of a lawsuit, "so that I cannot yet get free to enjoy again my usual and more congenial pursuits, but trust that I shall be able gradually to resume them before long. It was a delightful tour and I would have extended it much further had I not found that my mother and sisters were anxious for my return."

#### IN ENGLAND AGAIN.

The year 1839 was marked by visits from Dillwyn<sup>(49)</sup> and the younger De Candolle; visits to Oxford; to the British Association meeting at Birmingham, and to Swainson, and correspondence began with Bentham about Erica.

From 1839 till 1842, when he jots down, "definitely gone through my herbarium (South African): sent Leguminae to Bentham," Burchell seems to have done little in the way of botanical work. Swainson left for New Zealand in 1840, and so there was broken a very close friendship which had lasted for twenty years.

Burchell was saddened. A widowed sister and her family returned to Fulham from Van Diemen's Land, and this made the unpacking of his Brazilian material altogether impossible. His mother died in 1841, and family sickness and sorrow hovered around for several years.

Sir William Hooker was appointed Director of the Royal Botanic Gardens at Kew in 1841. Though Burchell resided very near to him, visited Kew and was requested to write a testimonial for Dr. J. D. Hooker, when he was a candidate for the Chair of Botany at Edinburgh University in 1845, between the two men there was not now the close comradeship of the early days. Any suggestions made by Hooker seemed to annoy Burchell rather than to stimulate him to greater exertion.

#### A CONTINENTAL TRIP.

Along with his sister Mary, Burchell visited France and Belgium in 1850. A record of this visit, in the form of a detailed itinerary and several beautiful sketches, is still extant; but, except for noting that he spent some time with Sainte-Hilaire<sup>(54)</sup>, he does not mention botany or botanists. He had travelled on the Continent three times, but had never been in Holland or Denmark. It is remarkable that, having been prevented from visiting these countries in 1832, he did not do so later on.

## WORKING ON HIS HERBARIA.

From 1847 till 1861, Burchell, though now an old man, was actively engaged working on his herbaria. He started off by sending to Oxford several packing cases filled with a miscellaneous collection of natural history specimens, and among them were various sheets of South African plants, *Strelitzia*, *Urania*, *Mahernia*, *Domax* as well as some *Fucus* from Table Bay. Shortly after this he sent sheets of Madeira, Teneriffe and Portuguese material.

Among the notes in his *Memoranda Botanica* MS. 1, Part II., are a few of no importance but of passing interest. For instance, he gives a detailed account of the condition of his Brazilian specimens when he opened his packages between February, 1847, and February, 1850, seventeen to twenty years after the specimens had been collected. He says he paid 24/- per ream for his mounting paper: it was Imperial cap containing 472 sheets to the ream for the two outside quires had only 20 sheets each. Bought in small quantities, it cost 1/- for 20 sheets of 23" x 15". Another quaint entry is one about his labels ( $2\frac{1}{2}$ " x  $\frac{1}{2}$ " ). They were printed in sheets of 128, and to cut up one of these took him 12 minutes.

While doing all this work, he was not entirely a recluse. He visited friends, went wandering in the New Forest in 1849, was at the British Association meeting at Hull in 1853, went to Matlock Bath, Buxton and Manchester in 1854, and was in the Lake district in 1855. During all these years, he was in close touch with Bentham, Daubeny and Greville.

He was aware of the fact that Harvey and Sonder were contemplating the publication of a *Flora Capensis*, and in 1857, he was communicating with Harvey about *Muraltia*. No letters giving more information about the transactions have as yet been found. A short note inserted in the *Memoranda Botanica* MS. is evidence that the two men were in touch with each other, if not directly, perhaps through a mutual friend, Polemann in Cape Town.

At a meeting of the Linnean Society in 1853, Bunbury<sup>(55)</sup> read a paper on the comparison of the botany of the Argentine with that of the Cape and New South Wales. Burchell listened to it with interest, and no doubt took part in the discussion which followed.

His last visit to Oxford was paid in 1860, when he attended that meeting of the British Association which was made famous because of the controversy between Huxley and the Bishop of Oxford concerning the Darwinian theory of the Origin of Species. Unfortunately, no letters or papers have yet been found to tell what Burchell thought of the theory: it would be of interest to know.



His health was failing, and from a letter (now among the MSS. in Oxford) written in February, 1863, to a friend residing near him in Fulham, it would appear that he had been an invalid for more than two years. He died under tragic circumstances on 23rd March, 1863.

No claim is made that this memoir published in *The Journal of South African Botany* in 1941 is, in anyway, a biography of Burchell, or a full record of his work in the botanical field. An endeavour has been made just to relate more or less chronologically a few outstanding incidents connected with his botanical work, in order to have a background against which there could be projected a fair estimate of his position among workers on the Science of Botany during the first half of the nineteenth century.

#### HIS CONTRIBUTIONS TO THE SCIENCE OF BOTANY.

Except for a short time while he was in St. Helena, Burchell held no public or professional office: he bequeathed no *Prodromus*, no *Systema Naturale*, no *Genera Plantarum* to the literature of Botany, and he did no laboratory work. But, "A multitude of careful observations spread over wide areas enables one to draw as sound conclusions from the working of Nature's own experiments as from the carefully controlled experiments carried out in the laboratory,"\* and to his colleagues and to the generations following him, especially in South Africa, Burchell left words of wisdom, the result of his accurate observations and careful and penetrating meditations.

Serving along with him on the British Association Committee were Agardh<sup>(44)</sup>, Bentham, Henslow<sup>(51)</sup>, Lindley<sup>(48)</sup> and Robert Brown<sup>(43)</sup>. All of them were first rank men in the small company engaged in the difficult task of freeing Botany from the trammels of the herbalist and the theologian, and of establishing it as a pure science and one worthy of a place for itself in the curriculum of the Universities.

In 1831, Lindley was asked to draw up a report to be presented to the British Association Meeting at Oxford in the following year, on *Catalogues of Country and Local Floras in preparation for a complete botanical survey of the British Islands*. The author of *Travels*, a personal friend of Lindley, and a member of the committee which discussed the subject, must have contributed valuable advice for he had given much time and thought to the making of catalogues.

If one reads some of the papers written by the leaders in botanical research in those days and then reads what Burchell had written many

\* Bews, J. W.: S.A. Assoc. for the Advancement of Science, Pres. Address 1931.

years before their work, one realises how stimulating and pervasive his influence must have been.

The following may serve as an illustration. In his MS. journal, now in Oxford, there is an entry which he did not use in the *Travels*. When he wrote it, he was at the spot he called *The Garden*, in the vicinity of the present-day Kuruman, on 18th August, 1812. It reads:—

“ I took a walk along the valley to see if anything could be collected: but this seems to be the worst time of the year for insects and flowers, and even for birds, as the trees being destitute of leaves, renders it very difficult to approach them. I, however, met with an exceedingly neat and pretty *Xeranthemum*, which trails on the ground and which it covers like a tuft or patch of Moss. This beautiful little plant is one of the *Primitiae* of the Spring. In picking up some transparent Quartz pebbles I was surprised at finding the *under* Surface coated (or properly growing under them), with a fine moss: whilst no moss was anywhere else to be seen: I think it is caused by the transparency of the pebble which keeps the ground moist and admits light at the same time: this moss was of a beautiful grass green. If so, it follows, as a corollary, that the seed of mosses and perhaps ferns would readily vegetate and thrive under a white bell glass without the admission of air: provided the surrounding earth be constantly damp.”

Someone before him may have expressed the same thought, but here it is, written by a man with no text book beside him, and no civilised human with whom to talk about it. But he must surely have spoken of it in after years, for his friend Professor Daubeny<sup>(53)</sup> carried out experiments and reported his findings in 1833, to the Royal Society and to the British Association, and in 1837, along with Ward<sup>(56)</sup> and Henslow<sup>(51)</sup>, submitted a paper concerning “ the experiments on the Growth of Plants under Glass and without any free communication with the outward air, on the plan of Mr. N. I. Ward<sup>(56)</sup> of London.”

Daubeny<sup>(53)</sup> and Ward<sup>(56)</sup> were personal friends of Burchell, and no doubt they reaped the benefit of his experience in Nature's open air laboratory.

Among the leading botanists of his day he was honoured and revered, and it has always been considered a matter for regret that he did not write and publish more. Several people try to explain that he could not continue writing because he showed feelings of pettiness and jealousy when dealing with greater or more fortunate men than himself, and that by doing so, he hindered his own power of production. Even admitting that he might have had his moods and fancies, this does not give a satisfactory explanation for the curtailment of his literary work. But

why regret the fact that he did not write more, when the question can be asked, "Has the fullest use been made of what he *has* written," and answered in the negative.

In his *Travels* he expresses his opinions on matters that are of vital interest at the present time, and does so with such a freshness that he seems to step in line with the trend of modern thought.

South Africa can claim him as one who loved and understood her. While wandering over her veld, her vast open solitudes, her deserts, her mountainous passes, or wending his way through her virgin forests, he observed, contemplated and apprehended, and when he did write his *Travels* he gave to the world a classic for which she provided the theme.

Having elected to set out his work in the form of an extended diary, Burchell's remarks on the botany of the country are scattered throughout the two volumes, and though the benefit derived from the reading of them repays any trouble which has to be taken in the finding of them, many people know little about some of the stimulating thoughts that are there for the seeking. There is an admirable index appended to Volume Two, and matters of botanical interest such as vegetable physiology, comparative botany, remarkable features in botany, as well as geography and botany can, by means of its help, be easily located in the narrative. But access to the volumes is not always easy and they are very costly. Perhaps one day a botanist will extract from them some of Burchell's pronouncements on botanical matters, and present in concise form what is now to be found only after perusing much text. By doing this, he would give to South Africa a work of historical interest in the literature of botany.

When Burchell entered in his note-book, "14 September, 1811, *Mesembryanthemum turbiniforme*, like a stone," it served as the foundation for his remarks on protective adaptations.\* He was considered by Sir W. Thiselton-Dyer † as being closely on the track along which Darwin travelled. Many years before Darwin gave his theory to the world, Burchell had observed facts and stated what he considered was their basic principle. He differed from Darwin only in that he turned invariably to the supernatural for an explanation of the phenomena he encountered.

He pleads for a broad vision of things, and his words are very apt in these days of great specialisation. They are to be found in *Travels*, I., p. 226:—

"Too intent on some little parts of the edifice, we often remain totally ignorant of the proportions and perfect symmetry of the

\* *Travels*, I., p. 310.

† Thiselton-Dyer, W. T., Sir: *Annals of Botany*, Vol. XX, p. 123, 1906.

whole. In the wide system of created objects, nothing is wanting : nothing is superfluous ; the smallest weed or insect is as indispensably necessary to the general good, as the largest object we behold. Each has its peculiar part to perform, conducive ultimately to the well being of all. Nothing more bespeaks a littleness of mind, and a narrowness of ideas than the admiring of a production of Nature, *merely* for its magnitude, or the despising of one, merely for its minuteness : nothing more erroneous than to regard as useless all that does not visibly tend to the benefit of *man*."

Marloth has stated that Drège was the first to establish distinct botanical regions in South Africa, and may be considered the founder of its Botanical Geography.\* Certainly Drège marked out certain areas which appear to contain natural groups, and he gave what Burchell did not give, the altitudes at which he collected his specimens. MacOwan has suggested that Burchell laid the foundations of Botanical Geography in South Africa and that Drège very ably followed and supplied much greater detail.

Burchell certainly gave attention to the matter and did indicate that the country through which he travelled could be divided into areas where certain distinctive types of vegetation flourished. He remarks on the habitat of such outstanding features as the *Stapelia*, the *Mesembryanthemum*, the *Euphorbia*, the *Protea* and the *Erica*, but never mentions them as missing in any area without a qualifying notice, such as, " I met with this nowhere on *my* route after leaving the Colony." He realised too well the immensity of the country to suggest that he could supply the first general botanical survey of it.

In his *Remarks on the Map*, an appendix accompanying his map which was published in Volume One of the *Travels*, he describes how he arrived at his decision to divide the country through which he travelled, into five political areas. This appendix along with statements in the narrative should make the matter quite clear, but unfortunately some volumes are denuded of both the map and the remarks thereon, and so the *Transgariepine* [Beyond the Orange] was mistaken by someone as meaning the Transvaal !

One explanation offered for the absence of the appendices is that the *Travels* was in great demand during the South African war by the army intelligence department, and naturally the map and the text about it were of special value !

Credit must be given to Burchell for his perception of the various undertakings he deemed necessary for the development and progress

\* Marloth, Rudolf: *The Flora of South Africa*, p. ix. 1913.

of South Africa, and it is interesting to note how some of his suggestions have been, perhaps unconsciously, carried out. He wrote of the need for a good Botanical Garden at Cape Town, and for the planting of shrubs, trees, sedge and sand-grasses to bind the sand on the Cape Flats. In the valley at the foot of the Asbestos mountains he found a grass (C.G. 2570) "like the wire grass of St. Helena (*Agrostis linearis*, Willd. S.P.) near akin to the cocksfoot grass of the English farmer," and he considered this could be used as good grazing ground. His comments on agricultural matters are well seasoned with sound botanical knowledge.

Burchell checked the accuracy of his appreciation of facts by giving verbal descriptions as well as executing graphic representations of them. His written accounts are always easy and pleasant to read, and his drawings are always satisfying and instructive. The sketches which are reproduced in Plates XIV-XVII are self-explanatory, but it might be added that, with the exception of the one of *Hemitelia* (which is an ink wash), they are in colour, which has shown no deterioration despite their age.

Much work awaits the botanist in this young country of South Africa, and, when tackling difficult problems, it is very often helpful to turn back to the old pioneers and find if they have any hints to hand on as to how to surmount obstacles and make discoveries. To no better counsellor can the young botanist turn than to William John Burchell. In these days of strife, speed, strain and striving let us take the advice he offers us in *Travels*, II, p. 333 :—

"Experience teaches that many curious and *minute plants* will escape detection, unless sought with more than ordinary attention and that by sitting or standing still and carefully looking around, many interesting objects of natural history can be discovered, which otherwise would have been passed unheeded and unknown. In those parts of my journey where the riches of botany were more profusely scattered, I seldom sat down to rest myself during my rambles without perceiving some object which would not have caught my eye under any other circumstance."

If progress has to be made in any subject, there must be a clear appreciation of the history of its development, and if history is only an expansion of biography, the history of Botany may be most easily read in the life and work of the men who have wrestled from Nature some of her secrets. Burchell found many of these, and to him is due all honour and esteem for having so well and surely laid the foundations of Botanical Science in South Africa.

## BIOGRAPHICAL NOTES.

- (47) DUNCAN, JOHN and PHILIP, two brothers who did much for the cause of Science. Both held the office of Keeper of the Ashmolean Museum, Oxford: John from 1823-9 and Philip from 1829-55.
- (48) LINDLEY, JOHN (1799-1865), Assistant Librarian to Sir Joseph Banks. Secretary to the Royal Horticultural Society, 1822-60: Professor of Botany at University College, London, 1828. He was mainly responsible for Kew Gardens being preserved and made over to the nation. He took a conspicuous part in building up the natural system of classification, and has been described as an evolutionist without knowing it.
- (49) DILLWYN, LEWIS WESTON (1778-1855), botanist, conchologist and potter, was born at Ipswich and was in the Turner-Hooker circle. Removed to Swansea in 1803. Collaborated with Dawson Turner in *The Botanists' Guide through England and Wales*, 1805. He wrote on the local flora and fauna of Swansea. He was M.P. from 1832-37.
- (50) BUCKLAND, WILLIAM (1784-1856), wit, geologist and divine, was Professor of Mineralogy, 1813, and Reader in Geology, 1819, at Oxford. He became Dean of Westminster in 1845. His famous Bridgewater Treatise of 1836 was a buttress of science as applied to contemporary theology. His drollery and quaint stories were famous.
- (51) HENSLow, JOHN STEVENS (1796-1861), along with Sedgwick, founded the Cambridge Philosophical Society. He became Professor of Botany in 1827. Darwin was one of his pupils. In 1837 he took the crown living at Hitcham, Suffolk, and there introduced a voluntary study of botany in schools, and encouraged horticultural shows. He was a member of the Senate of London University and was examiner in botany there in 1838.
- (52) MEISNER, CHARLES FREDERICK (1800-1874), was educated at Vevey, Vienna and Paris. His father was of Hanoverian origin, but was settled in Berne. Meisner contributed to De Candolle's *Prodromus*, to *Linnaea*, *Botanische Zeitung*, Hooker's *Journal of Botany* and to *Flora Brasiliensis*. He published in 1836-43 his *Plantarum vascularium genera*. His extensive herbarium was sold at his death to Columbia College, New York.
- (53) DAUBENY, CHARLES GILES BRIDLE (1795-1867), M.D., was Professor of Chemistry, 1822-55, of Botany, 1834, and of Rural Economics, 1840, at Oxford. His paper "*On the Sexuality of Plants*," read at the Brit. Association meeting in 1860, gave strong support to Darwin. He was a droll little figure, and his portrait is certainly reminiscent of Mr. Pickwick's immortal features.
- (54) SAINT-HILAIRE, AUGUSTE DE (1799-1853), was a French traveller and naturalist. He collected in Brazil in 1816. Among his publications were: *Flora Brasiliae meridionales ou Histoire et Description de toutes les plantes qui croissent dans les differentes provinces du Bresil* (1824) and *Voyage dans les provinces de Rio de Janeiro et de Minas-Geraes* (1830).
- (55) BUNBURY, CHARLES JAMES FOX, 8th Baronet; (1809-86) F.R.S. and F.L.S., was the writer of *Botanical Fragments*, published in 1833. Burchell met him at the Linnean Society, and Bunbury quoted Burchell's opinion about both botanical and zoological specimens.
- (56) WARD, NATHANIEL BAGSHAW (1791-1863), M.D. and botanist, was the inventor, about 1827, of the Wardian case, in which growing plants can be transported, without watering, through the extremes of heat or cold. By its means tea plants were taken from Shanghai to the Himalayas and the cinchona introduced into India.



PLATE XIV. *Hemitelia capensis* at Grootte-vaders-bosch.  
Drawing, inkwash: Wm. J. Burchell.  
Copyright by the Gubbins Trustees.  
Photo: James L. Smith, Johannesburg.



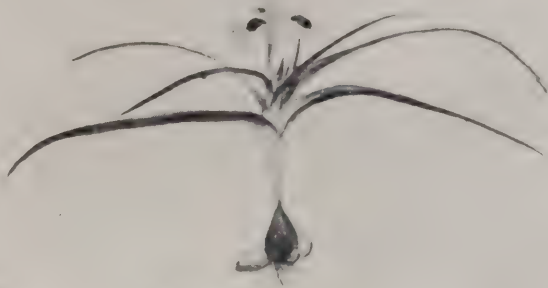
PLATE XV. *Loranthus* sp. "in super ramos, Haakdoorn," at Shallow Ford, Orange River. *Vahlia* sp. at the confluence of the Vaal and Riet River.

Drawings, tinted: Wm. J. Burchell.

Copyright by the Gubbins Trustees.

Photo: James L. Smith, Johannesburg.





Ju...  
 ...  
 ...



...  
 ...  
 21.9.12. ...  
 ...

PLATE XVI. *Morea papilionacea* at Pintado Fountain: *Nananthus aloides* at  
 Jubiru Fountain: both in Kuruman Division.  
 Drawings, tinted: Wm. J. Burchell.  
 Copyright by the Gubbins Trustees.  
 Photo: James L. Smith, Johannesburg



PLATE XVII. *Pachypodium succulentum*: *Cadaba juncea*: both at the Kloof Village in the Asbestos Mountains.

Drawings, tinted: Wm. J. Burchell.

Copyright by the Gubbins Trustees.

Photo: James L. Smith, Johannesburg.